

## P A T E N T   C L A I M S

1. A decanter centrifuge for separation of a supplied material in a light phase and a heavy phase (13), comprising an elongate bowl (2) arranged for rotation about its longitudinal axis, said bowl having a separation chamber, a screw conveyor (3) being provided in the separation chamber and being coaxial with the bowl, said screw conveyor comprising a body (4), which carries a screw comprising one or more flights (7, 7') and having a nominal transport speed varying along the longitudinal axis (20), an inlet with at least one inlet opening (6) in the screw conveyor for supply of the material to the separated, and at least one discharge opening (14) for the heavy phase in the bowl at one end of the screw conveyor, in which the screw conveyor is made to rotate relative to the bowl (2) in view of conveying the heavy phase towards the discharge openings (14) for the heavy phase, and in which the screw conveyor is provided with a baffle positioned between the inlet openings (6) and the discharge openings (14), said baffle dividing the separation chamber in a substantially cylindrical separation part (17) and an at least partially conical discharge part (18), the discharge openings (14) for the heavy phase being positioned in the discharge part (18), the inlet openings (6) being positioned at the opposite side of the baffle (8) relative to said discharge openings, characterized in that immediately upstream of the baffle (8, 8'), seen in relation to the transport direction, a transition part (19) is provided between the separation part (17) and the discharge part (18), and that the screw conveyor (3) has a bigger nominal

transport speed in the transition part (19) than in the separation part (17) immediately before the transition part (19), the change of the nominal transport speed of the screw from the nominal transport speed in the separation part immediately before the transition part to the higher nominal transport speed in the transition part being established by a change (21) of the screw pitch.

2. A decanter centrifuge according to claim 1, characterized in that the change (21) of the screw pitch is abrupt.

3. A decanter centrifuge according to claim 1, characterized in that the change of the screw pitch is gradual.

4. A decanter centrifuge according to claims 1 - 3, characterized in that the pitch angle of the screw in the separation part (17) is considerably smaller than  $45^\circ$  relative to the tangential direction and that the change (21) of the screw pitch is an increase.

5. A decanter centrifuge according to claim 5, characterized in that said increase is 40-80%.

6. A decanter centrifuge according to claims 1 - 3, characterized in that the pitch angle of the screw in the separation part (17) is considerably bigger than  $45^\circ$  relative to the tangential direction and that the change (21) of the screw pitch is a decrease.

7. A decanter centrifuge according to claims 1 - 6, characterized in that the screw has the bigger nominal transport speed over at least  $1/3 \times 1/n$  of a turn before the baffle (8), preferably

over approximately  $2/3 \times 1/n$  of a turn,  $n$  being the number of flights (7, 7').

8. A decanter centrifuge according to claims 1 - 7, characterized in that the inlet (6) is placed upstream of the transition part (19) in the separation part (17).

9. A decanter centrifuge according to claims 1 - 8, characterized in that the baffle (8) has an axial extension, the border between the discharge part and the transition part being positioned at the centre point (23) of the axial extension of the baffle.

10. A decanter centrifuge according to claims 1 - 9, characterized in that the screw pitch is increasing in the separation part (17) in a direction away from the transition part (19).